

Ball Following Robot

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Abstract- To identify and tracking the real time object is important concept in computer vision. In order to detect the object first take the necessary and relevant step to gather information form the many computer vision applications. This idea is used for surveillance purpose, monitor the army base, traffic monitoring and human machine interaction. In this project robots can detect the object and rotate as left and right position and then move forward and backwards depends upon the object movement. It maintains the constant distance between the object and the robot. In the hardware setup we use the arm 11 raspberry pi camera to attach the robot for detection of object. Camera is attached to the servos for pan and tilt. We use linuxos with python coding to identify the object with open cv.

Keywords- Camera Module, Motor Drivers, Raspberry Pi Kit, Robot Motors, Sd-Card.

I. INTRODUCTION

The field of Robotics, Artificial Intelligence and Machine Learning is evolving rapidly that it is sure to change the lifestyle of mankind in near future. Robots are thought to understand and interact with the real world through sensors and machine learning processing. Image recognition is one of the popular way in which the robots are thought tounderstand objects by looking at the real world through a camera just like we do. The aim of our project is to present a method for object detection and tracking on its attributes . This project is used in many application such as military, sports, etc.

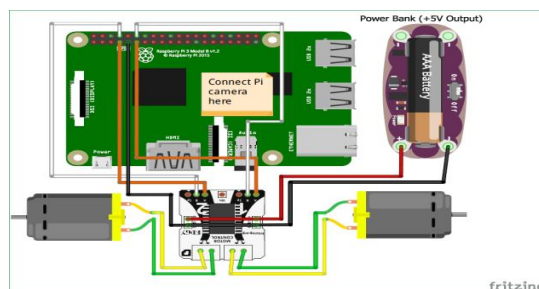
II. OBJECTIVE

- To conduct a comprehensive background literature research .
- To evaluate software development platforms for the robot .
- To learn the chosen development language.
- To gain a basic understanding of mechanics required for robots and build a mechanical robot .
- To construct a program using the selected platform to implement some of the minimum requirements and other possible extended requirements

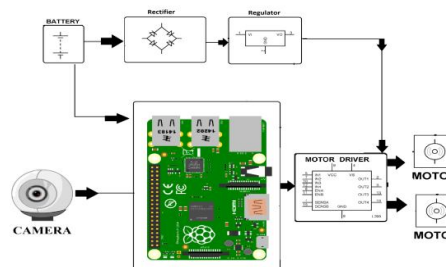
III. METHODOLOGY

- STEP 1: Reformatting SD card
- STEP 2: To download NOOBS onto the microSD card
- STEP 3: To set up your Raspberry Pi
- STEP 4: To download the Raspbian operating system on the Raspberry Pi
- STEP 5: To configure your Raspberry Pi
- STEP 6: Install the python commands in open cv to interface the opencv-python.
- STEP 7: Creation of Bot
- STEP 8: Programming for Object Detection
- STEP 9: Implementation of image processing on BOT

IV. ARCHITECTURE DIAGRAM



V. BLOCK DIAGRAM



VI. WORKING FLOW

- The image was taken by the camera which was placed in the raspberry pi kit, the camera equipment was connected via usb port.
- The capturing image from the web cam connected executed in the linuxos software.

- The extracted image taken out from the web camera send to the raspberry pi kit and followed to execution of python coding.
- In the python coding the signal are generated, these generated signals coming from the execution of kit and sent to robot.
- By combination of sixth sense robotic kit and raspberry pi followed the color object robot effectively.

VI. TOOLS USED

Bot is designed with the raspberry pi, DC motor, wheel and web camera. Raspberry pi is configure with opencv and python. Coding is design in python language.

VII. CONCLUSION

Thus, the bot will detect the object when it is in the scope. The bot moves backward when the object is close to the bot and moves forward when the object is foraway from the bot. when it is not in the scope the bot rotate clockwise to detect the object.

VII. ACKNOWLEDGEMENT

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